

**K L UNIVERSITY**  
**ADVANCED HIGHWAY ENGINEERING (11 – CE 339)**

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**Pre – requisite: 13 - CE 305**

**SYLLABUS**

**Hill Roads:** General Considerations, Alignment of Hill Roads, Geometrics of Hill Roads, Design & Construction of Hill Roads, Drainage in Hill Roads, Maintenance Problems in Hill Roads, Tunnels, Miscellaneous Structures in Hill Roads, Landslides, Snow Removal. **Low Volume Roads:** Introduction, Types of Rural Road Pavements, Use of Low – Grade Aggregates and Stabilized soil, Pavement Design for Low volume Roads, Technologies in Rural Road Construction and Maintenance, Appropriate Quality control in Rural Road Construction. **Desert Roads:** Desert Regions in India, Sand Dunes, their functions and Type, Principles of Road Location in Dune Areas, Guidelines for Design, Maintenance. **Roads in Swampy and water-logged Areas and in Black cotton Soils:** Swampy Ground, Water-logged Area – its Features, Treatment of Roads in water-logged areas, Roads in Black Cotton Soils. **Special Roads:** Expressways - Common Terms, Features of Expressways, Design Standards, Safety Barriers, Expressway Signs and Markings. Toll Roads - Background, Advantages and disadvantages of toll roads, Forms of Toll Projects, International Experience on Toll Roads. Urban Roads - Functional Classification of Roads in Urban Area, Pedestrian Facilities on Urban Roads, Separate Cycle Tracks and Bus Facilities.

**TEXT BOOKS:**

1. Principles and practices of highway Engineering by Dr. L. R. Kadiyali & Dr. N. B. Lal  
 Khanna publishers, Latest Edition

**REFERENCE BOOKS:**

1. Highway Engineering by S.K.Khanna & C.J.Justo, Nemchand & Bros., Latest Edition.

**CODES:**

1. MORT&H: Guidelines for Expressways Part-I and Part-II
2. MORT&H Guidelines for Maintenance Management of Primary, Secondary and Urban Roads
3. IRC:86-1983 Geometric Design Standards for Urban Roads in Plains
4. IRC:52-2001 Recommendations About the Alignment Survey and G.Design of Hill Roads
5. IRC:SP:48-1998 Hill Road Manual
6. IRC:SP:72-2007 Guidelines for the Design of Flexible Pavements for Low Volume Rural Roads
7. IRC:SP:20-2010 Rural Roads Manual
8. IRC:SP:62-2004 Guidelines for the D&C of Cement Concrete Pavement for Rural Roads
9. MORD Specifications for Rural Roads
10. MORD Standard Data Book for Analysis of Rates for Rural Roads
11. IRC:34-2011 Recommendations for Road Construction in Areas Affected by Water Logging, Flooding and/or Salts Infestation (First Revision)

**Note:** Use Latest codes if revised